PATENT CLAIMS

1.   An apparatus having two cameras (1; 2), of which a first camera (1) is sensitive in the visible spectral region and a second camera (2) is sensitive in the infrared spectral region, and that are arranged at a defined spacing (a) from one another in order to record images of an identical scene (3) having at least one object (4), characterized in that it further comprises a triangulation device (7) that calculates a distance of the object (4) to the camera (1; 2) from the defined spacing (a) and the images recorded by the two cameras (1; 2).

2.   The apparatus as claimed in claim 1, characterized in that it comprises a reproduction system (8) with a display screen (13) for electronic production and display of a display image (14), constructed from a plurality of pixels, of the scene (3), the reproduction system (8) deriving the display image (14) from image signals (RGB; YUV; Y_{IR}) that are supplied by the two cameras (1; 2).

3.   The apparatus as claimed in one of the preceding claims, characterized in that the first camera (1) is a color camera.

4.   The apparatus as claimed in claims 2 and 3, characterized in that the reproduction system (8) comprises a combination device (9) for producing a combined video signal ($Y_{IR}UV$) and derives the display image (14) from the combined video signal ($Y_{IR}UV$), the combined video signal ($Y_{IR}UV$) comprising for each pixel an item of luminance information derived from the image signal (Y_{IR}) of the second camera and an item of color information derived from the image signal (RGB; YUV) of the first camera.

5.   The device as claimed in claim 4, characterized in that the first camera (1) supplies a multi-component color video signal (YUV) as the image signal (RGB; YUV), and in that one of the components (Y) is an item of luminance information for each pixel.

6.   The apparatus as claimed in claim 5, characterized in that the first camera (1) comprises sensors (5) that are respectively sensitive in a red, a green or a blue wavelength region, and a transformation matrix that transforms signals (RGB) supplied by the sensors (5) into the multi-component color video signal (YUV).

7.   The apparatus as claimed in claim 6, characterized in that the reproduction system (8) comprises a back transformation matrix (12) that transforms a multi-component color video signal ($Y_{IR}UV$) into a second color video signal (R'G'B') that represents the brightness of each pixel in a red, a green and a blue wavelength region, and derives the display image (14) from the second color video signal (R'G'B').

8.   The apparatus as claimed in one of claims 2 to 6, characterized in that the reproduction system (8) produces a spatial image of the object (4).

9.   A vehicle with an apparatus as claimed in one of the preceding claims.

10.   The vehicle as claimed in claim 9, characterized in that it comprises an automatic anti-collision apparatus (15) that uses the distance calculated by the triangulation device (7).

11.   A method for determining distance to an object (4), in which:

(a)   an image of a scene (3) having the object (4) is recorded in a visible spectral region with a first camera (1);

(b)   an image of the same scene (3) is recorded in an infrared spectral region with a second camera (2) that is arranged at a defined spacing (a) from the first camera (1); and

(c)   a distance of the object (4) to the camera (1; 2) is calculated from the defined spacing (a) and the images recorded by the two cameras (1; 2).

12.   The method as claimed in claim 11, characterized in that the object (4) is detected in the two images by finding common features in the images of the scene (3) recorded by the two cameras (1; 2).

13. The method as claimed in claim 12, characterized in that the image recorded with the first camera (1) is represented by a multi-component color video signal (RGB; YUV), and at least one component of the multi-component color video signal (RGB; YUV) is compared with the image recorded by the second camera (2) in order to find the common features.

14. The method as claimed in claim 12, characterized in that the image, recorded with the first camera (1), of the scene (3) reproduces an item of luminance information (Y) of the scene (3), and this image is compared with the image recorded by the second camera (2) in order to find the common features.